DRAINAGE BASIN CHARACTERISTICS FROM ERTS DATA, 1 Sept. 1972 - 31 Oct. 1972

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Prepared for:

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Type I Progress Report

ERTS-I

a. Title: Investigation of Basin Characteristics extracted from ERTS Data for Improving Regression Estimates of Streamflow

ERTS-A Proposal No.: SR 342-6

b. GSFC ID No. of P. I.: IN 389

c. Statement and explanation of any problems that are impeding the progress of the investigation:

No ERTS data sufficiently free of cloud cover have been received as of this date. Analysis of ERTS-analogous aircraft data indicates that it will be necessary to have less than 10% of opaque cloud cover over the target watersheds which will comprise less than half of each ERTS scene. This constraint results from the small size and irregular distribution of the units that make-up the themes.

d. Discussion of the accomplishments during the reporting period and those planned for the next reporting period:

Accomplishments during the reporting period include the successful use of ERTS-analogous aircraft data to extract infrared-reflective vegetation and water.

Color IR photography (NASA MX 144, 166) at a scale of 1:120,000 was analyzed using the GEMS (General Electric Multispectral Information Extraction System) at Valley Forge, Pa. and the U.S. Geological Survey MIAS (Multispectral Image Analysis System) at McLean, Va. Wet to saturated soil, a theme of considerable potential hydrologic significance, was successfully extracted using three bands of data simultaneously.

Plans for the next reporting period include:

1. Preparation of drainage basin masks for use in measuring the area of extracted basin features by video planimetering.

2. Assuming availability of cloud-free ERTS imagery, proceed with thematic extraction of 4 basin characteristics using satellite data.

3. Analysis of ERTS underflight photography, flown in the fall, when received from NASA/Wallops.

4. Assist in installing DCP at Beaverdam Branch at Matthews, Md.

e. Discussion of significant scientific results and their relationship to practical applications or operational problems including estimates of the cost benefits of any significant results (To be prepared in scientific abstract form of 200 words or less):

There are no significant scientific results at this time.

f. A listing of published articles, and/or papers, pre-prints, in-house reports, abstracts of talks, that were released during the reporting period:

An afternoon of lectures on the applications of remote sensing to hydrology with special emphasis on multispectral analysis of ERTS-analogous aircraft data were given as part of a two-week course on Interpretation of Multispectral Imagery at the Canada Centre for Remote Sensing, September 15, 1972.

Sections g, h, i, j, and k are not applicable during this reporting period.